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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/612,445	07/07/2000	David E. Dodds	84883-102 ADB	7045

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EXAMINER	
SHANG, ANNAN Q	

ART UNIT	PAPER NUMBER
2614	

DATE MAILED: 03/29/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/612,445	DODDS ET AL.	
	Examiner	Art Unit	
	Annan Q Shang	2614	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *14 January 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-13 and 22-29* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-13 and 22-29* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1-13 and 22-29, are rejected under 35 U.S.C. 103(a) as being unpatentable over **Eames (6,208,637)** in view of **Abdollahi et al (6,278,778).**

As to claim 1, note the **Eames** reference figure 5, discloses method and apparatus for providing analog telephony services over a digital subscriber loop access systems and further discloses apparatus for distributing ADSL signals to customer premises from a central office comprising the following:

the claimed "a central office..." is met by Central Office (CO) (fig. 5, col. 7, lines 31-53 and col. 8, line 15-20), note that the CO includes PSTN 100 "POTS switching system" for telephony signals and ADSL terminals (note also fig. 9 and col. 9, lines 35-55, note that Universal Service Access Multiplexor (USAM) 340 or USAM ADSL 510 and 520, includes linecard plug-in units 920, and also contains Narrow-band lines, broadband line cards, VDSL line cards and ADSL line cards), for high speed data that connects ATM network and other private network "data network;"

the claimed "a plurality of customer locations..." are met by Customer Premises (Cust-P) 190 (col. 8, lines 23-28), note that CP-190 has a telephone 194 (Tel 194 "onevoice frequency POTS" and high speed data signals 181 to devices "ADSL

terminal;"

the claimed "field cabinet..." is met by USAM ADSL (RT) 520 (USAM 520), (col. 7, lines 63-col. 8, line 6), note that USAM 520 contains a telephony/xDSL linecard 353 (fig. 10 and col. 10, line 63-col. 11, line 10) and contains wire interface that interconnects the individual twisted wire pairs 180 (TWP) "metallic telephone line" from the respective Cust-P 190 to USAM 520; where each TWP 180 is arranged to transmit both telephony signals and ADSL signals between the respective Cust-P 190 and USAM 520 (col. 8, lines 19-24);

the claimed "a bi-directional link..." is met by Optical Fibers 160 (O-Fib 160) (col. 7, lines 28-35), note that O-Fib 160 transmits broadband analog signals in pre-selected frequency bands between the CO and USAM 520, note also that the telephony frequency band and the broadband frequency band are pre-selected frequency bands;

the claimed "splitter and interface module" at USAM 520 is met as follows; note that the architecture of the USAM in fig. 10, is implemented in the various USAMs including USAM 510 in the CO;

the claimed "a plurality of signal splitting coupler units..." are met by USAM linecard plug-ins 920 (USAM 920) (fig. 10 and col. 11, lines 31-35), note that USAM 920 linecard includes, Narrow-band lines, broadband line cards, VDSL line cards and ADSL line cards (col. 9, line 53-55) which are associated with a respective Tel 194 and transmits and receives signals and separates the ADSL signals and telephony signals from the respective Tel 194 line;

the claimed "a plurality of interface and frequency translation units each associated with respective one of the coupler units..." is inherent to USAM linecards 920 (col. 10 line 63-col. 11, line 23), note the that the POTS signals of 0-4 kHz and the ADSL signals of 25 kHz-1.1 mHz, are shared on the downstream/upstream communication link, O-Fib 160, as such USAM 920 inherently includes frequencies translations units for receiving the separated ADSL signals for downstream/upstream communication between the CO and the respective individual Tel 194 in a pre-selected one of the frequency bands that are associated with the respective individual Tel 194 line; and

the claimed "a plurality of frequency translation and interface units at CO..." is inherent to Broadband Digital Terminal 130 (BDT 130) (col. 4, lines 1-26 and col. 7, lines 31-47), note that BDT 130 at the CO, inherently includes a plurality of frequency translation and interface units, since POTS signals of 0-4 kHz and the ADSL signals of 25 kHz-1.1 mHz, are shared on the downstream/upstream communication link, O-Fib 160, each of which is associated with the pre-selected band on the link O-Fib 160, associated with a respective individual telephone line and provides an interface between the respective ADSL signals at USAM 520 and the ADSL terminal of BDT 130 of the CO.

Eames fails to explicitly teach USAM 520 "field cabinet" which is remote from the CO, associated with the plurality of Customers and a trunk cable containing a large number of TWPs and extending from the USAM 520 to the CO, where the USAM 520 includes connections for connecting the individual TWPs to the trunk cable for

connections of signals between the Cust-P 190 and the CO and where USAM 520 includes a plurality of connectors each arranged to connect the separate voice frequency POTS signals between the respective individual Tel 194 line and the trunk cable.

However, note **Abdollahi et al** reference figure 1, disclose system and method of power limiting call processing in telecommunications equipment where an Access Multiplexing Terminal (AMT) 17 or 22, is located remotely from Central Office (CO) 10, and includes copper twisted pairs 19 or 25, that carries data, voice, video and other forms of traffic to a number of subscribers 26 (col. 2, line 50-col. 3, line 7).

Therefore it would have been obvious to one of ordinary skill in the act at the time of the invention to modify Eames system with the teaching of Abdollahi to provide a remote Access Multiplexing Terminal or a USAM that is remote from the Central Office for multiplexing broadband signals and POTS signals to Customer Premises to various areas, because such a distributed architecture would allow for more effective service to broad geographical regions.

As to claim 2, the claimed "filter..." is inherent to A 932 and B 934 interface of USAM, note col. 10, line 63-col. 11, line 10, note that A 932 and B 934 transmits downstream/upstream telephony signals (col. 5, line 57) approximately 400 Hz to 4 KHz and broadband signals above 20 kHz, hence a filter, filters out only telephony signals and broadband signals.

As to claims 3, 4 and 5, Eames further discloses bi-directional link that includes the following: the claimed "fiber optic link..." is met by Op-Fib 160, note figure 5 and col.

7, lines 28-35, note that Op-Fib 160 links USAM 520 and CO and includes optical transceiver, Op-Fib 160 includes two unidirectional links and A 932 and B 934 interfaces contains directional hybrid coupler to interface the Op-Fib 160 links, note figure 10, and further includes Power Supply A and B that supplies power from CO to USAM 520, note col. 11, lines 36-43 and figure 11.

As to claim 6, Eames further discloses where the frequencies translators of USAM are arrange such that the frequency bands are located within respective 6 MHz frequency band communicated on Op-Fib 160 link, note col. 8, lines 28-44.

As to claim 7, the claimed "CATV modulator is met by ADSL SYSTEM 654 (figure 11A-B) within USAM 520, note col. 11, lines 44-55, note that USAM 520 locates the respective ADSL signals within a respective video channel frequency band which is communicated on Op-Fib 160 link.

As to claims 11, 12 and 13 Eames further discloses where the bi-directional link includes a coaxial cable link, note col. 9, lines 60-64, where the USAM which includes narrowband, broadband, VDSL and ADSL linecards, supports bi-directional services, including ADSL signals via TWPs, coaxial cable, optical or wireless, and includes at least transmitter and receiver to receive signals at respective frequencies, note figure 9 and col. 9, lines 35-64, note further that the USAM transmits downstream signals at a respective first frequency band and USAM 520 also transmits upstream signals at a second respective band to allow bi-directional signals of different frequencies to be transmitted across the coaxial cable between the USAM 520 and the CO, note col. 8, lines 28-44 and col. 10, lines 63-col. 11, line10.

As to claim 22, the claimed apparatus is composed of the same structural elements that were discussed in the rejection of claim 1.

As to claims 23 and 24, the claimed "interface module arranged to transport the ADSL signals on the bi-directional linked in a modulated format intended for transmission on the metallic telephone lines..." is inherent to Broadband Digital Terminal 130 (BDT 130) (col. 4, lines 1-26 and col. 7, lines 31-47), note that BDT 130 at the CO, inherently includes a plurality of interface modules, since POTS signals of 0-4 kHz and the ADSL signals of 25 kHz-1.1 mHz, are shared on the downstream/upstream communication link, O-Fib 160, each arranged to transport the ADSL signals, without significant amplitude change, on O-Fib 160 link in a modulated format intended for transmission on TWP lines and where the interface module at the CO is arrange to modulate a high frequency carrier and where the carrier is demodulated at USAM 520 to recover the DSL signal which is then transmitted on TWP 180 to Cust-P 190.

As to claim 26, Eames further discloses where the interface units are arrange such that a plurality of ADSL signals, individually modulate a respective plurality of high frequency carriers separated in frequency by an amount that avoids interference between the individual DSL signals (col. 13, lines 9-27).

As to claims 27 and 28, Eames further discloses where the interface units are arranged such that power failure or failure in the DSL transmission equipment does not impair the POTS service (col. 6, lines 6-12, col. 11, lines 56-65 and col. 12, lines 56-67), and further discloses arranging interface units such that the DSL signals are not

concentrated, and all Cust-P 190 may simultaneously utilize the full ADSL bit rate (col. 4, lines 27-38, col. 8, lines 28-44 and col. 18, lines 5-20).

As to claim 29, Eames fails to explicitly teach a remote USAM that receives its power supply from CO through TWP lines including TWP lines that would otherwise be used for voice frequency transmission.

However, Abdollahi teaches AMT 17 and 22 that receives its power supply via TWP lines 20 and 24.

Therefore it would have been obvious to one of ordinary skill in the act at the time of the invention to modify Eames system with the teaching of Abdollahi to provide an Access Multiplexing Terminal or a USAM that receives power supply from the CO via TWP lines to enable the CO have control of power supply to each USAM and further monitor power status of USAM and create a centralize power distribution system.

3. Claims 8-10, are rejected under 35 U.S.C. 103(a) as being unpatentable over **Eames (6,208,637)** in view of **Abdollahi et al (6,278,778)** as applied to claims 1, and further in view of **Inoue et al (4,907,218).**

As to claims 8-10, **Eames** as modified by **Abdolladi,** teach all the claim limitations as previously discussed with respect to claims 1, and further teach ADSL transmission techniques using Quadrature Amplitude Modulation (QAM), Carrierless Amplitude Modulation, Pulse/Adaptive Differential Code Modulation, etc., to transmit frequencies across the bi-directional transmission medium between CO and USAM (col. 10, lines 10-36); and furthermore teach a frequency translator that translates to intermediate frequencies and modulates to respective video channel frequency and

directs the translations from ADSL signal to pre-selected frequency band and teaches a tuner that translates the pre-selected frequency band to the intermediate frequency band so as to translate the signal from the intermediate frequency band to the ADSL signal to the TWP line (col. 8, lines 15-28 and col. 11, lines 1-35).

Eames as modified by Abdolladi, fail to explicitly teach frequency translator that includes a first translator arranged to translating to an intermediate frequency by double side band transmitted carrier modulation (AM-DSM-TC) of a radio frequency carrier at the intermediate frequency and translation a frequency band by AM-DSM-TC modulation of a radio frequency carrier where each frequency translator includes a tuner, that also includes an envelope detection of the AM-DSM-TC signal.

However, note the **Inoue et al** reference figures 1 and 2, discloses multiplex signal processing apparatus capable of multiplexing mass information in the specific band while keeping compatibility with the conventional television system where a frequency is translate to intermediate frequency by double side band amplitude modulation (figs. 1, 12(a-b) and col. 3, line 41-col. 4, line 23).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the teaching of Inoue into the system of Eames as modified by Abdolladi, in order to reduce the impairment caused by multiplex signals on the conventional television receivers and further suppress the crosstalk from the main signals to the multiplex signal and provide a better effective use of transmitted/received information.

4. Claim 25, are rejected under 35 U.S.C. 103(a) as being unpatentable over **Eames (6,208,637)** in view of **Abdollahi et al (6,278,778)** as applied to claims 22, and further in view of **Counterman (6,310,894).**

As to claim 25, Eames as modified by Abdollahi, fail to explicitly teach interfaces units arranged such that multiple ADSL signals from the respective Cust-P 190 are combined to a single broadband signal through the use of frequency division multiplexing (FDM).

However, note **Counterman** reference figs. 4-7 discloses method and apparatus for service multiplexing over telephone networks and where multiple ADSL signals from respective customer locations are combined to a single broadband signal through the use of FDM.

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the teaching of Counterman into the system of Eames as modified by Abdollahi to FDM means to easily accommodate low speed frequencies which uses different data rate and/or different protocols.

Response to Arguments

5. Applicant's arguments with respect to claims 1-13 and the newly added claims 22-29 have been considered but are moot in view of the new ground(s) of rejection. The amendment to the claims necessitated the new ground(s) of rejection discussed above. This Office Action is made FINAL.

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Liu et al (6,442,195) disclose multiple low speed Sigma-delta analog front ends for full implementation of high-speed data link protocol.

Kerpez (6,430,199) discloses method and system for distributing telephone and broadband services over the copper pairs within a service location.

Wetzel et al (6,408,004) disclose ADSL dual latency determination.

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Annan Q Shang** whose telephone number is **703-305-2156**. The examiner can normally be reached on **700am-500pm**.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, **John W Miller** can be reached on **703-305-4795**. The fax phone number for the organization where this application or proceeding is assigned is **703-872-9306.**

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the **Electronic Business Center (EBC) at 866-217-9197 (toll-free).**

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